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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,981	11/20/2003	Taison Tan	Q175-US1	2730

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EXAMINER	
HODGE, ROBERT W	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/718,981	TAN ET AL.	
	Examiner	Art Unit	
	ROBERT HODGE	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-23,25-47 and 74-78* is/are pending in the application.

4a) Of the above claim(s) *76 and 77* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-23,25-47,74,75 and 78* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/10/08 has been entered.

Election/Restrictions

Newly submitted claims 76 and 77 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 76 and 77 are directed to a mutually exclusive species that was not originally presented in the instant claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 76 and 77 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

Applicant's arguments with respect to claims 1-3, 5-10 and 14 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claim 19 applicants continue to reiterate that no motivation has been provided, but highlight in bold text the motivation that was provided to them in the preceding office actions. Applicants are further directed to MPEP 2141 (III) Rational B of the KSR v. Teleflex Supreme Court decision in 2007 which states in part that the simple substitution of one known element for another to obtain predictable results is an obvious modification, said predictable results have already been provided to applicants numerous times. Applicants state that Yamada does not teach two separate layers, one layer containing lithium and the other containing SiO and LiSiO, as was already discussed in the grounds of rejection Beard already teaches the two layers, one of which contains lithium metal and by substituting the mixture of SiO and LiSiO from Yamada in for the intercalating layer of Beard the instantly claimed invention is still unpatentable as already discussed in the previous rejections as well as with the above clarifications.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Regarding claims 34 and 41 applicants' arguments are not commensurate with the scope of the claims because there is no recitation in either claim reciting any sort of gradient. Again as has been previously stated to applicants, Examination on the merits is made with the pending claims read in light of the specification, however limitations from the specification cannot be read into the claims, therefore if applicants want limitation from the specification to be considered in the claims, the claims must recite those limitations.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3, 5-18, 74, 75 and 78 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the instant specification for the negative limitation of a "non-zero concentration gradient" and applicants have not provided any direction in their remarks where support for said negative limitation can be found.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 34-47 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,147,739 hereinafter Beard.

As seen in figure 1A, Beard teaches a primary battery (abstract) comprising a cathode 11 which does not contain lithium (Examples III-V in Table 1), an anode 12 having two separate layers disposed on the current collector, one layer 14 is a lithium metal active material layer and the other layer 15 is an intercalating compound which contains lithium (column 4, lines 28 et seq.) as an active material, an electrolyte solution which contains lithium in contact with the cathode and the anode (column 3, lines 47-53), wherein the layer 15 is positioned such that it protects the layer 14 from the electrolytic solution while allowing the electrochemical reaction to take place (column 4, line 53 – column 6, line 20).

Because the chemistry of the instantly claimed invention has been found it is the Examiner's position that the battery of Beard will exhibit the same and/or substantially similar characteristics to that of the instant claimed invention as outlined in claims 34-47 and therefore Beard reads on the claims as so recited. A reference, which is silent about a claimed invention's features, is inherently anticipatory if the missing feature *is necessarily present in that which is described in the reference.* In re Robertson, 49 USPQ2d 1949 (1999). Therefore the burden is shifted to applicants to provide

evidence (not arguments) comparing the prior art invention of Beard to the instant invention.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 5-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beard in view of U.S. Pre-Grant Publication No. 2002/0172862 hereinafter Tamura.

Beard as discussed above is incorporated herein.

Beard does not teach a non-zero concentration gradient in the second medium.

Tamura teaches that by providing a concentration gradient in an active material layer of a lithium battery, the reaction of the active material layer with the electrolyte is effectively suppressed and the cracking of the active material layer during discharge is controlled which prevents the separation of the layers (paragraphs [0011] and [0012]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to provide a non-zero concentration gradient in the second medium layer of Beard as taught by Tamura in order to provide an active material layer wherein the reaction of the active material layer with the electrolyte is effectively suppressed and the cracking of the active material layer during discharge is controlled which prevents the separation of the layers thus increasing the batteries efficiency. If a technique has been used to improve one device (providing a concentration gradient in an active material

layer of a lithium battery), and a person of ordinary skill in the art would recognize it would improve similar devices in the same way (effectively suppressing the reaction of the active material layer with the electrolyte and controlling the cracking of the active material layer during discharge to prevent the separation of the layers), using the technique is obvious unless its actual application is beyond his or her skill. MPEP 2141 (III) Rationale C, KSR v. Teleflex (Supreme Court 2007).

Claims 11, 74 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beard in view of Tamura as applied to claim 1 above, and further in view of U.S. Pre-Grant Publication No. 2002/0004169 hereinafter Yamada.

Beard as modified by Tamura does not teach that the second active material includes lithium, silicon and oxygen such as LiSiO or SiO or that both LiSiO and SiO are present.

Yamada teaches a non-aqueous electrolyte lithium battery wherein the anode comprises at least two active materials including LiSiO and SiO in the intercalating layer of the anode (abstract and paragraphs [0046]-[0048]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to use both LiSiO and SiO as the active materials for the intercalating layer in Beard as modified by Tamura as taught by Yamada in order to provide a lithium primary battery that has improved discharging characteristics that will prevent deterioration during discharging of the battery thus improving the overall performance of the battery. Simple substitution of one known element (Yamada's active material) for another (Beards active material) would achieve the predictable result of providing a

lithium primary battery that has improved discharging characteristics that will prevent deterioration during discharging of the battery thus improving the overall performance of the battery. MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007).

Claims 12, 13, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beard in view of Tamura as applied to claims 1 and 14 above, and further in view of U.S. Pre-Grant Publication No. 2003/0211383 hereinafter Munshi.

Beard as modified by Tamura does not teach that the cathode comprises a fluorinated carbon, or that the electrolyte comprises lithium bis(oxalate) borate.

Munshi teaches a primary lithium battery comprising a lithium or lithium alloy anode such as a lithium-silicon alloy, a cathode comprising a fluorinated carbon (i.e. CF_x) and a non-aqueous electrolyte comprising lithium bis(oxalate)borate (see paragraphs [0014], [0020], [0024], [0025] and [0028]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to use CF_x for the cathode material and lithium bis(oxalate)borate in the electrolyte of Beard as modified by Tamura as taught by Munshi in order to provide a cathode that has increased kinetic properties and the ability to maintain excellent conductivity during discharge of the battery, which reduces the overall cell resistance and to provide an electrolyte that demonstrates excellent chemical and electrochemical stability when it is in contact with lithium, thus improving the over all performance of the battery. Simple substitution of one known element (Munshi's cathode material) for another (Beard's cathode material) would achieve the predictable result of providing a lithium primary battery that has improved discharging characteristics that will prevent

deterioration during discharging of the battery thus improving the overall performance of the battery. MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007). If a technique has been used to improve one device (providing lithium bis(oxalate)borate in the electrolyte of a battery), and a person of ordinary skill in the art would recognize it would improve similar devices in the same way (providing excellent chemical and electrochemical stability when it is in contact with lithium), using the technique is obvious unless its actual application is beyond his or her skill. MPEP 2141 (III) Rationale C, KSR v. Teleflex (Supreme Court 2007).

Claims 19-23, 25, 26, 29, 32, 33, are rejected under 35 U.S.C. 103(a) as being unpatentable over Beard in view of Yamada.

Beard as discussed above is incorporated herein.

Beard does not teach that the intercalating compound contains silicon, or that it includes lithium, silicon and oxygen such as LiSiO or SiO or that both LiSiO and SiO are present.

Yamada as discussed above is incorporated.

At the time of the invention it would have been obvious to one having ordinary skill in the art to use both LiSiO and SiO as the active materials for the intercalating layer in Beard as taught by Yamada in order to provide a lithium primary battery that has improved discharging characteristics that will prevent deterioration during discharging of the battery thus improving the overall performance of the battery. Simple substitution of one known element (Yamada's active material) for another (Beards active material) would achieve the predictable result of providing a lithium primary

battery that has improved discharging characteristics that will prevent deterioration during discharging of the battery thus improving the overall performance of the battery. MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007).

Claims 27, 28, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beard in view of Yamada as applied to claim 19 and 29 above, and further in view of Munshi.

Beard as modified by Yamada does not teach that the cathode comprises a fluorinated carbon, or that the electrolyte comprises lithium bis(oxalate) borate.

Munshi as discussed above is incorporated herein.

At the time of the invention it would have been obvious to one having ordinary skill in the art to use CF_x for the cathode material and lithium bis(oxalate)borate in the electrolyte of Beard as modified by Yamada as taught by Munshi in order to provide a cathode that has increased kinetic properties and the ability to maintain excellent conductivity during discharge of the battery, which reduces the overall cell resistance and to provide an electrolyte that demonstrates excellent chemical and electrochemical stability when it is in contact with lithium, thus improving the over all performance of the battery. Simple substitution of one known element (Munshi's cathode material) for another (Beard's cathode material) would achieve the predictable result of providing a lithium primary battery that has improved discharging characteristics that will prevent deterioration during discharging of the battery thus improving the overall performance of the battery. MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007). If a technique has been used to improve one device (providing lithium bis(oxalate)borate in

the electrolyte of a battery), and a person of ordinary skill in the art would recognize it would improve similar devices in the same way (providing excellent chemical and electrochemical stability when it is in contact with lithium), using the technique is obvious unless its actual application is beyond his or her skill. MPEP 2141 (III) Rationale C, KSR v. Teleflex (Supreme Court 2007).

Claim 78 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beard in view of Yamada as applied to claim 19 above, and further in view of Tamura.

Beard as modified by Yamada does not teach non-zero concentration gradients in the second medium.

Tamura as discussed above is incorporated herein.

At the time of the invention it would have been obvious to one having ordinary skill in the art to provide a non-zero concentration gradients in the second medium layer of Beard as modified by Yamada as taught by Tamura in order to provide an active material layer wherein the reaction of the active material layer with the electrolyte is effectively suppressed and the cracking of the active material layer during discharge is controlled which prevents the separation of the layers thus increasing the batteries efficiency. If a technique has been used to improve one device (providing a concentration gradient in an active material layer of a lithium battery), and a person of ordinary skill in the art would recognize it would improve similar devices in the same way (effectively suppressing the reaction of the active material layer with the electrolyte and controlling the cracking of the active material layer during discharge to prevent the separation of the layers), using the technique is obvious unless its actual application is

beyond his or her skill. MPEP 2141 (III) Rationale C, KSR v. Teleflex (Supreme Court 2007).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HODGE whose telephone number is (571)272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Hodge/
Examiner, Art Unit 1795